

CHAPTER 4 Calculator Notes for the TI-83 and TI-83/84 Plus

Note 4A • BOWLING Program

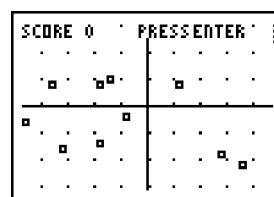
The BOWLING program will plot ten points on a graph. Your goal is to find the fewest possible number of equations that hit all the points. The higher the level of difficulty, the larger the graph. There is a certain tolerance built in the program, so you don't have to hit the points exactly.

a. Run the program and choose your level of difficulty.

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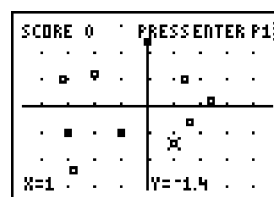
*** BOWLING ***
1: EASY
2: MEDIUM
3: DIFFICULT
4: QUIT
    
```

b. A graph appears with ten points. (Occasionally the program will plot duplicate points so you might see fewer than ten points.)



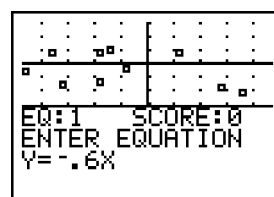
$[-5, 5, 1, -3, 3, 1]$

c. Press **ENTER** to trace on the points.



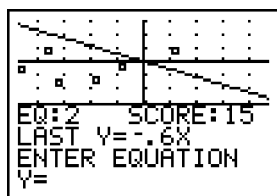
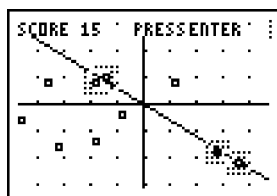
$[-5, 5, 1, -3, 3, 1]$

d. Enter an equation, trying to hit as many points as possible. When playing the “EASY” level, you'll score one point for the first point you hit, two points for the second point hit with the same line, four points for the third point hit, and so on. When playing the “MEDIUM” level, you'll score 3 points for the first point you hit, 12 points for the second point hit with the same line, 48 points for the third point hit, and so on. When playing the “HARD” level, you'll score 5 points for the first point you hit, 30 points for the second point hit with the same line, 180 points for the third point hit, and so on.



$[-5, 5, 1, -3, 3, 1]$

e. Continue tracing on points and entering equations until you have hit all the points.



Clean-Up

If you quit the program before the end and don't use the QUIT option, you'll be left with a split screen. Press **MODE** and select Full. Then press **2nd** **[FORMAT]** and select GridOff. You may also want to turn off the stat plot. Press **2nd** **[STAT PLOT]** **[4]** (PlotsOff) **ENTER**, or press **Y=**, arrow to any plot that is highlighted, and press **ENTER**.

(continued)

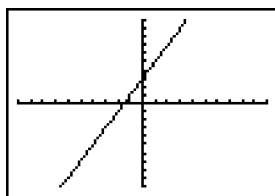
```

PROGRAM:BOWLING
1→L:PlotsOff
FnOff:Full
ExprOff:Func
Menu("*** BOWLING ***","EASY",1,
    "MEDIUM",2,"DIFFICULT",3,"QUIT",Q)
Lbl 3:L+1→L
Lbl 2:L+1→L
Lbl 1:10→P
4.7L→H:-H→Hmin
H→Hmax:1→Hsc1
3.1L→U:-U→Ymin
U→Ymax:1→Ysc1
randInt(-23L,23L,P)/5→L1
randInt(-12L,14L,P)/5→L2
SortA(L1,L2)
Plot1(Scatter,L1,L2,□)
0→S:0L1→L3:0→N
Repeat P=0
0→T:N+1→N:Full
Text(0,0,"SCORE")
Text(0,24,S)
Text(0,44,"PRESS ENTER")
Pause
Lbl 8:Trace
L1+L3→L1
SortA(L1,L2,L3)
Horiz
Disp "EQ: SCORE:"
Output(1,4,N)

Output(1,14,S)
If N>1:Then
Disp "LAST Y="
Output(2,8,Str1)
End
Disp "ENTER EQUATION"
Input "Y=",Str1
String→Equ(Str1,Y1)
If Y1=T:Goto 8
Full:DispGraph
For(J,1,P)
For(K,-.25,.25,.25)
L1(J)+K→H
If Y1≥L2(J)-.3 and Y1≤L2(J)+.3
Then:T+1→T
For(A,L1(J)-.4,L1(J)+.4,.2)
For(B,L2(J)-.4,L2(J)+.4,.2)
Pt-Change(A,B)
End:End
100→L3(J):.4→K
End:End:End
S+(2L)T-1→S
P-T→P:End
Disp "FINAL SCORE",S
Disp "NUMBER OF"
Disp "EQUATIONS",N
PlotsOff
Lbl Q
Full:PlotsOff:GridOff:ExprOff
    
```

Note 4B • Using the DRAW Menu

To draw a vertical line, go to the Home screen and press **2nd** [DRAW] **4** (Vertical). Enter the x -coordinate of the vertical line you want to draw and press **ENTER**. If you want to draw vertical line(s) on the graph of an equation, it's best to draw the line(s) after you enter and graph the equation. To remove a vertical line, press **2nd** [DRAW] **1** (ClrDraw) **ENTER**.



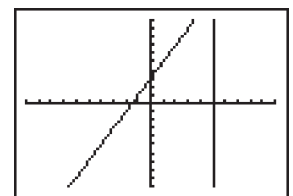
$[-10, 10, 1, -10, 10, 1]$

```

DRAW POINTS STO
1:ClrDraw
2:Line(
3:Horizontal
4:Vertical
5:Tangent(
6:DrawF
7:Shade(
    
```

```

Vertical 5
    
```



$[-10, 10, 1, -10, 10, 1]$